## Specifications

Refer to the HP 4274A & HP 4275A data sheet for details.

### Parameters Measured

| | | |
|---|---|---|
| L: inductance<br>C: capacitance<br><br>R: resistance<br>Z: impedance<br>D: dissipation factor | Q: =1/D<br>ESR: equivalent series resistance<br>G: conductance<br>X: reactance<br>B: susceptance | θ: phase angle<br>Δ: deviation for L, C, R, Z,<br>Δ%: % of deviation |

### Measurement Range

| MODEL | HP 4274A | HP 4275A |
|---|---|---|
| L | 100.00 nH – 1000.0 H | 100.00 nH – 10.00 H |
| C | 1.0000 pF – 1.00 F | 1.0000 pF – 100.00 μF |
| R, \|Z\|, ESR, & X | 100.00 mΩ – 10.000 MΩ | 1.0000 Ω – 10.000 MΩ |
| D | 0.00001 – 9.9999 | 0.00001 – 9.9999 |
| Q (1/D) | 0.01 – 9900 | 0.01 – 9900 |
| G & B | 1.0000 μS – 100.00 S | 1.0000 μS – 10.00 S |
| θ | 0 – ±180° | 0 – ±180° |

### Measurement Accuracy

| FREQUENCY RANGE | C-D/Q | L-D/Q |
|---|---|---|
| | D-range: 0.00001–9.9999<br>Q-range: 0.01–9900 (=1/D)<br>(C & D accuracies apply only when C: full scale and D: ≤ 0.1) | D-range: 0.00001–9.9999<br>Q-range: 0.01–9900 (=1/D)<br>(L & D accuracies apply only when L: full scale and D: ≤ 0.1) |
| | **HP 4274A** | |
| 100 Hz<br>120 Hz | C: 1000 pF–1000 mF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 100 μH–10 kH, 0.1% +3<br>D: 0.33% + 0.0013 + 1 |
| 200 Hz | C: 1000 pF–1000 mF, 0.1% + 2<br>D: 0.32% + 0.0007 + 1 | L: 100 μH–10 kH, 0.1% + 3<br>D: 0.32% + 0.0012 + 1 |
| 400 Hz | C: 100 pF–100 mF, 0.14% + 1<br>D: 0.34% + 0.0013 + 1 | L: 100 μH–10 kH, 0.1% + 3<br>D: 0.33% + 0.0011 + 1 |
| 1 kHz | C: 100 pF–100 mF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 10 μH–1000 H, 0.1% + 3<br>D: 0.33% + 0.0013 + 1 |
| 2 kHz | C: 100 pF–100 mF, 0.1% + 2<br>D: 0.32% + 0.0007 + 1 | L: 10 μH–1000 H, 0.1% + 3<br>D: 0.32% + 0.0012 + 1 |
| 4 kHz | C: 10 pF–10 mF, 0.14% + 1<br>D: 0.34% + 0.0013 + 1 | L: 10 μH–1000 H, 0.1% + 3<br>D: 0.31% + 0.0011 + 1 |
| 10 kHz | C: 10 pF–10 mF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 1 μH–100 H, 0.1% + 3<br>D: 0.33% + 0.0013 + 1 |
| 20 kHz | C: 10 pF–10 mF, 0.1% + 2<br>D: 0.32% + 0.0007 + 1 | L: 1 μH–100 H, 0.1% + 3<br>D: 0.32% + 0.0012 + 1 |
| 40 kHz | C: 1 pF–1000 μF, 0.14% + 1<br>D: 0.34% + 0.0013 + 1 | L: 1 μH–100 H, 0.1% + 3<br>D: 0.31% + 0.0011 + 1 |
| 100 kHz | C: 1pF–1000μF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 100 nH–10 H, 0.1% + 3<br>D: 0.33% + 0.0013 + 1 |
| | **HP 4275A** | |
| 10 kHz | C: 10 pF–100 μF, 0.1% + 3<br>D: 0.33% + 0.008 + 1 | L: 10 μH–100H, 0.1% + 3<br>D: 0.33% + 0.0013 + 1 |
| 20 kHz | C: 10 pF–100 μF, 0.1% + 2<br>D: 0.32% + 0.0007 + 1 | L: 10 μH–100 H, 0.1% + 3<br>D: 0.32% + 0.0012 + 1 |
| 40 kHz | C: 1 pF–10 μF, 0.14% + 1<br>D: 0.34% + 0.0009 + 1 | L: 10 μH – 100 H, 0.1% + 3<br>D: 0.31% + 0.0011 + 1 |
| 100 kHz | C: 1 pF–10 μF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 1 μH – 10 H, 0.1% + 3<br>D: 0.33% + 0.0013 + 1 |
| 200 kHz | C: 10 pF–10 μF, 0.1% + 2<br>D: 0.32% + 0.0007 + 1 | L: 1 μH – 1000 mH, 0.2% + 3<br>D: 0.52% + 0.0023 + 1 |
| 400 kHz | C: 1 pF–1000 nF, 0.14% + 1<br>D: 0.34% + 0.0009 + 1 | L: 1 μH – 1000 mH, 0.2% + 3<br>D: 0.51% + 0.0021 + 1 |
| 1 MHz | C: 1 pF–1000 nF, 0.1% + 3<br>D: 0.33% + 0.0008 + 1 | L: 100 nH – 100 mH, 0.2% + 3<br>D: 0.55% + 0.0025 + 1 |
| 2 MHz | C: 10 pF–100 nF, 0.2% + 3<br>D: 0.55% + 0.0025 + 1 | L: 1 μH – 10 mH, 0.5% + 5<br>D: 1.0% + 0.0053 + 1 |
| 4 MHz | C: 1 pF–10 nF, 1% + 20 + 0.007 pF<br>D: 3.3% + 0.01 + 1 | L: 1 μH – 10 mH, 1% + 5<br>D: 2.0% + 0.0063 + 1 |
| 10 MHz | C: 1 pF–10 nF, 2% + 20 + 0.002 pF<br>D: 4% + 0.011 + 1 | L: 100 nH – 1 mH, 2% + 7<br>D: 3.1% + 0.002 + 1 |

Range: full scale range, accuracy: % of reading + counts (D accuracy: % of reading + absolute D value + count).
Conditions: Warm-up time > 30 minutes, environment temperature: 23°C ±5°C).
Refer to technical data sheet for accuracy details.

### Measurement Frequencies

HP 4274A: 100 Hz–100 kHz, 11 spots (100 Hz, 120 Hz, 200 Hz, 400 Hz, 1 kHz, 2 kHz, 4 kHz, 10 kHz, 20 kHz, 40 kHz, 100 kHz; ±0.01%)
HP 4275A: 10 kHz–10 MHz, 10 spots (10 kHz, 20 kHz, 40 kHz, 100 kHz, 200 kHz, 400 kHz, 1 MHz, 2 MHz, 4 MHz, 10 MHz; ±0.01%)

**Test Signal Level:**
HP 4274A: 4-ranges (1 mVrms–5 Vrms) continuously variable
HP 4275A: 3-ranges (1 mVrms–1 Vrms) continuously variable
**Test Signal Level Monitor:** standard.
**Displays:** dual 5½-digit and single 3-digit; maximum display 199999 (full scale and overrange in high resolution mode), and 4½-digit; maximum display 19999 in normal mode. (Number of digits depends on measurement frequency, test level, and range).
**Circuit modes:** "⊣⊢ series equivalent circuit and "⊣⊢" parallel equivalent circuit. Automatic selection available in AUTO mode.
**Deviation measurement:** difference between recallable stored reference and displayed is deviation value (count or percent).
**Ranging:** AUTO or MANUAL (UP/DOWN).
**Trigger:** internal, external or manual.
**Measurement terminals:** four-terminal pair with guard.
**Auto zero adjustment:** automatic normalization of the readout offset due to residuals of the test fixture by pushbutton operation.
**Normalization range:** C<20 pF, L<2000 nH, R<0.5Ω, G<5μS.
**Self test:** automatic operational verification check indicates pass or fail condition.

### Reference Data

**Measurement time:** (typical) 140–180 ms (>1 kHz); 140–210 ms ≤1 kHz (measurement time depends on range, sample value and offset adjustment value).
**Z – θ measurement time:** 170–210 ms >1 kHz; 170–240 ms ≤1 kHz.
**High resolution mode:** approximately 8 times the normal measurement time.
**Auto ranging time:** 100 ms - 300 ms per range change.

### General Information

**Operating Temperature and Humidity:** 0°C – 55°C, ≤95% RH at 40°C
**Power:** 100, 120, 220V ±10%, 240V + 5% – 10%, 48 – 66Hz, 135VA max. (HP 4274A); 165VA max. (HP 4275A)
**Size:** 177H x 425W x 574Dmm (7" x 16.75" x 22.6")
**Weight:** 18kg (39.6lbs)

### Accessory Furnished

**HP 16047A:** Direct coupled test fixture.

### Accessory Available

**HP 16023B:** dc Bias Controller, for control of dc bias 5350☎
Opt 001 or 002 Internal Bias Supply.

### Special Options

One or two arbitrary test frequencies for each instrument are available. For more details, please contact nearest HP sales office.
**Selectable Frequency Range**
**HP 4274A:** 100 Hz to 100 kHz to ±0.1%. If two frequencies are added, at least one frequency must satisfy the following equation: f = 1200/N kHz where N is an integer from 12 to 12000.
**HP 4275A:**

### Ordering

**HP 4274A**
**Opt W30:** 3
**HP 4275A**
**Opt W30:** 3
**Opt 001:** 0
1 mV steps
**Opt 002:** 0
100 mV ste
**Opt 004:** F
☎ Fast-Shi